

## Continuous fabrication of polymeric vesicles and nanotubes with fluidic channels

Wilson and coworkers reported a fluidic channel based strategy for fabricating different shaped polymeric vesicles. The formation of polymeric vesicles is based on the self-assembly of amphiphilic block polymer, which constitutes of a hydrophobic segment and a hydrophilic segment. In a conventional solvent switch approach, poor solvent (typically water) was added to block polymer organic solvent (good solvent) solution. Hydrophobic segment starts to precipitate out, inducing the assembly of amphiphilic polymer and formation of bi-layered polymer vesicles. With this approach the output in one batch is limited, the control over size is difficult. Using the fluidic channel for polymeric vesicle fabrication, the laminar flow in the device enables controlled diffusion of two miscible liquids at the phase boundary and offers high controllability over the self-assembly process of the block polymer, leading to the formation of homogeneous polymeric structures of different shapes. In addition, the fabrication is a continuous process, enabling upscaling.

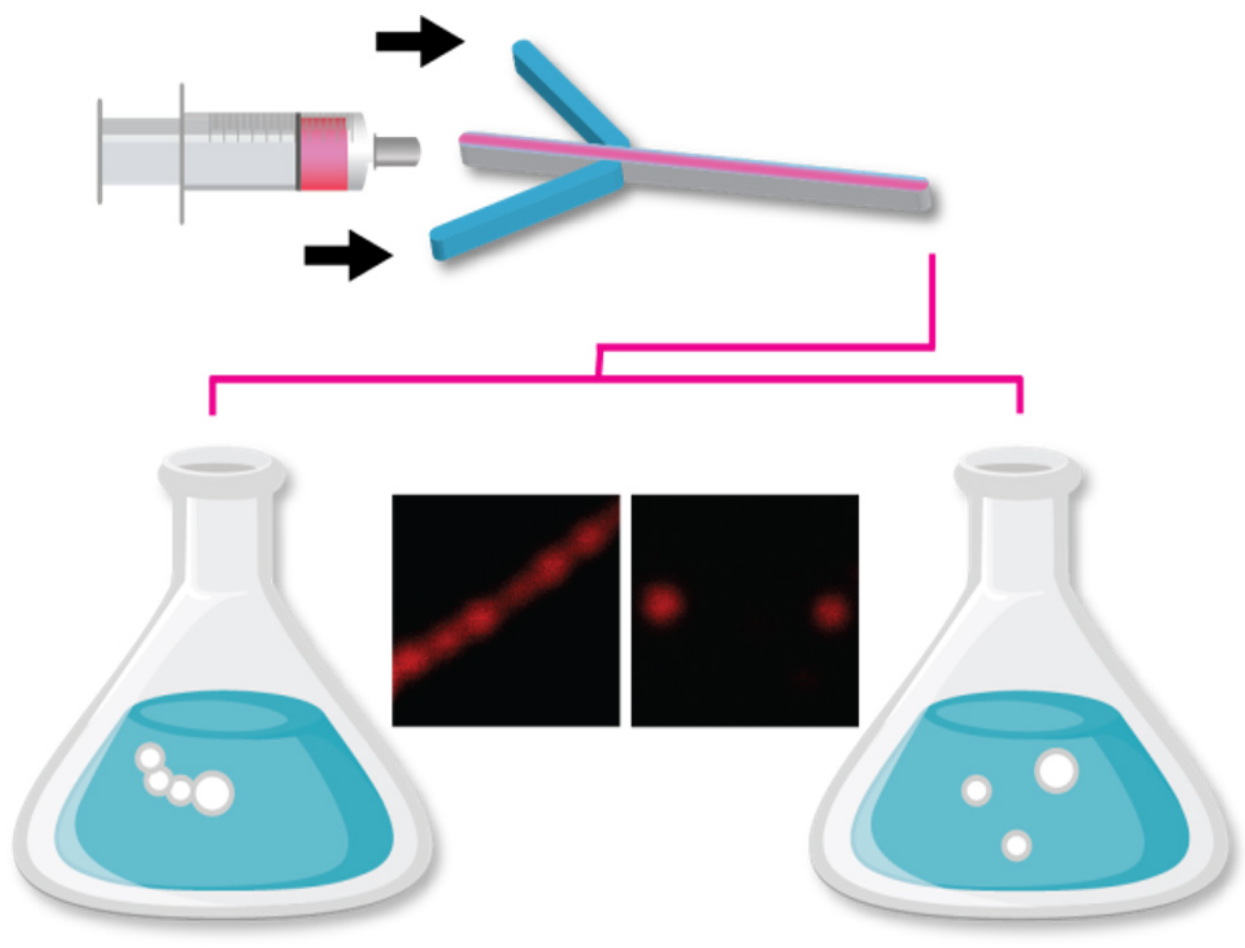


Fig. 1. The fluidic platform for the preparation of different shaped polymeric vesicles.

With the fluidic approach, tubular shaped, stomach shaped and sphere shaped vesicles are obtained. The group also demonstrated the possibility of loading these different shaped polymeric structures with small molecule drugs, dyes and inorganic nanoparticles. This technique offers a versatile methodology to rapidly and continuously produce well-defined polymeric structures, holding promise for application in multiple fields, including nanomotors, drug delivery and sensing.

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## **Publication**

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